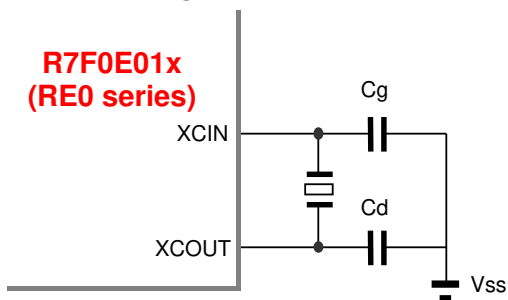


## Renesas Electronics R7F0E01x (RE0 series) Group Matching Data Details

### ◆Evaluation items and evaluation data of oscillation circuit characteristics

#### •Circuit Diagram



#### Evaluation item

v	Item	Symbol	Recommended conditions
1	Negative resistance	RL	The value shall be at least 5 times the product R1 specification value.
2	Oscillation margin	M	
3	Drive Level	D.L	Must be within product specifications.

To ensure safe use by our customers,

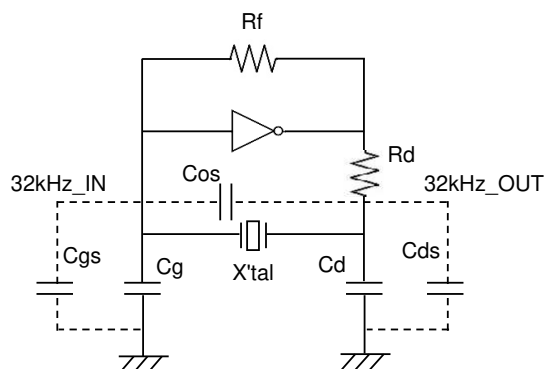
We recommend an oscillation margin of 5 times or more.

#### •Product and recommended circuit constants

IC Type	IC Setting			32kHz Crystal Unit			External element		Oscillation Characteristics			Supply voltage
	RESISTOR setting			Product name	R1Max. (kΩ)	CL (pF)	Cg (pF)	Cd (pF)	RL (kΩ)	M (倍)	D.L (μW)	Vdd (V)
	SODRV	SODRV0	Target CL(pF)									
R7F0E01x (RE0 series)	1	0	4	SC-32S	70	4	3	3	-354	5.1	<0.01	3.3
				SC-20S	70	4	3	2	-388	5.5	<0.01	
	0	1	6	SC-32S	70	6	6	6	-351	5.0	0.01	
				SC-20S	70	6	7	6	-389	5.6	0.02	
	1	1	7	SC-32S	70	7	9	9	-491	7.0	0.01	
				SC-20S	70	7	9	9	-471	6.7	0.01	
				SC-16S	90	7	9	9	-519	5.8	0.01	
				SC-12S	90	6	7	7	-649	7.2	<0.01	
					90	7	9	8	-483	5.4	<0.01	
				SC-32S	70	12.5	22	18	-705	10.1	0.08	
	0	0	12.5	SC-20S	70	12.5	22	18	-591	8.4	0.07	
				SC-16S	90	12.5	22	22	-527	5.9	0.01	
				SC-12S	90	6	7	6	-859	9.5	<0.01	
					90	7	9	8	-783	8.7	0.01	
					90	12.5	22	18	-683	7.6	0.02	

Load capacitance (CL) other than those in the table above, automotive products (SC-32A, SC-20A), low-profile products (SC-20T), and other products are also available.

### ◆About circuit load capacitance



The oscillation circuit has stray capacitance.  
The CL value is set considering stray capacitance.  
 $CL = C_g \times C_d / (C_g + C_d) + C_s$  (pF)

$C_s$  ≡ Circuit stray capacitance

What is floating capacity?

$C_{os}$  : 32kHz\_IN-32kHz\_OUT Stray capacitance

$C_{gs}$  : 32kHz\_IN-Vss Stray capacitance

$C_{ds}$  : 32kHz\_OUT-Vss Stray capacitance

### ◆Circuit board design considerations

Place the crystal unit, capacitors, and resistors as close to the Chip as possible to shorten the wiring.  
To prevent interference with other signal lines, do not place other signal lines in the area where the crystal unit is mounted (underside).

The oscillation circuit design is described on our website.

In addition, please use our circuit matching service. For details, please contact our sales representatives or visit our website.

### ◆Caution

The above evaluation results are reference values evaluated on specific samples and "IC manufacturer's evaluation board",

They are subject to change depending on the customer's board design.

Please note that the capacitance values and characteristics of external elements may vary depending on differences in stray capacitance and other factors in actual circuit boards.